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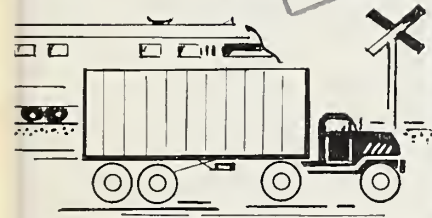
agricultural marketing

TRENDS AND PROSPECTS

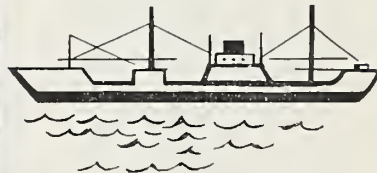
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Cover page

By land, by sea, and by air, agricultural products are moving to market by newer and more efficient methods. Railroad cars and semitrailers, filled to heaping with grain, and refrigerated cars and vans, loaded with fresh farm foods, speed along the tracks and highways—east, west, north, and south. Grain ships now sail direct from Duluth to Europe or move along the Nation's expanding system of inland waterways to other inland ports. And in the air, specially designed airplanes carry exotic, highly perishable fruits and flowers from Hawaii, California, and Florida to Chicago, New York, and other northern markets. The year 1961, indeed, marks a new era in the transportation of agricultural products.

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Editor, Milton Hoffman

Associate editor, Jeanne Starr Park



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TRENDS AND PROSPECTS

THE DEMAND FOR FARM PRODUCTS



by Rex F. Daly

1961 food supplies will probably be a little larger than they were in 1960—with the increase just about matching the gain in population. Consumer demand for food is expected to remain strong, with consumer income continuing at a high level. Overall consumption of food per capita will probably continue at about the same pace as in 1960.

Retail food prices and prices received by farmers for food should be about the same as 1960 figures.

Exports of major farm products, aided by substantial Government export programs, are expected to continue large in 1960-61 and may equal or exceed the record volume of the 1959-60 marketing year.

Supplies of farm products, in general, are abundant. In addition to very large carryover stocks of wheat, corn, and cotton, a record farm output this year is contributing to an increase of about 3 percent in the volume of farm marketings. With prices received by farmers averaging in the first 10 months of 1960 about 2 percent below a year earlier, cash receipts from farm marketings totaled almost 1 percent above the first 10 months of 1959.

1961 should bring a continuation of general stability in farm prices, farm cost rates, and farm incomes.

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Consumer Demand High

Economic activity has leveled off but consumer incomes are expected to hold relatively steady. Further increases are in prospect as economic growth is resumed in 1961. Towards the end of 1960, there was a rough balance of the forces in the economy making for economic expansion and those for decline. This balance may persist for some months into 1961 and evidence suggests that the uptrend in economic activity will be resumed in 1961.

A prospective increase in Government expenditures, a continued though moderate increase in consumers buying and some increase in residential construction in 1961 should largely offset any weakness that may develop in business investment and inventory demand.

With supplies generally easy and many plants operating well below expanded capacity, there is no great pressure for expansion of plant and equipment. Corporate profits, too, have declined since the first quarter of 1960.

Much of the uncertainty in the immediate future stems from inventory demand. With 1960 inventory sales-ratios higher than a year ago, an easier supply situation generally, and relatively stable price prospects, there may be some further reduction in the level of inventories in coming months. However, a substantial adjustment in business inventories from a very large accumulation in the first quarter of 1960 to a small cut-back in the third quarter of last year has already occurred.

Consumer buying will likely be a strengthening force in 1961. With prospects for relatively stable economic activity in the months ahead, employment and consumer incomes are expected to be well maintained. A rise in residential construction would improve the market for household appliances. Automobile sales, though improving recently, may not be quite

as high in 1961 as in 1960 and the larger proportion of compact cars will tend to reduce the outlay per car. Consumer expenditures for food, other nondurables and services are expected to rise.

Exports Continue High

Agricultural exports in 1960-61 are expected to approximate the \$4.5 billion in the 1959-60 fiscal year and, in terms of quantity, a new record is likely. Contributing factors include the generally high economic activity and consumer incomes abroad, large and growing dollar reserves in industrial countries and continued large exports in support of the "Food-for-Peace" plan.

Exports of wheat (including flour) will exceed last year's total and may reach a new high. Exports of tobacco, soybeans, tallow, meat, hides and dairy products will also rise. Cotton and vegetable oil exports are expected to continue high. Smaller exports are indicated for lard, rice, feed grains and high protein feeds.

Big Supplies Dominate Situation

Record supplies of major crops and further increases in marketing of livestock products will again largely shape the agricultural price and income outlook for 1961. Stocks of wheat and feed grains, which have been excessive for some years, are expected to increase further in the 1960-61 marketing year. The build-up in cattle numbers, though slowing in 1960, is likely to continue in 1961. Livestock production as a whole is expected to increase.

The record 1960 farm output tops 1959's high and is 29 percent above the 1947-49 average. Estimated crop output was more than 3 percent larger than 1959, according to the November Crop Report. Much of the increase is in grains. With average growing conditions in 1961, total crop output will continue large. Present indications point to about the same acreage in 1961 for corn and wheat. A larger acreage is likely for soybeans and sugar beets and the acreage allotment was recently increased for 1961 crop cotton.

In addition to larger marketings of cattle and calves, hog production also will turn up in 1961. Hog marketings, however, are likely to continue relatively light at least until the latter part of 1961. Milk production is expected to rise slightly again and the uptrend in production of broilers probably will continue in 1961.

Three crops—wheat, cotton, and corn—account for nearly half of the total planted crop land and the value of all crop production. In mid-1960 these crops accounted for some 80 percent of \$8.5 billion CCC investment in price support loans and inventories. In 1961, CCC investment is expected to increase with increased price support activity for wheat and corn.

Farm Prices and Incomes Stable

Prices received by farmers in 1960 were averaging slightly below 1959. But in the last few months of 1960 they averaged above year-earlier levels when marketings of meat animals and citrus fruits were heavy. The price outlook for 1961 does not point to much change from current levels, though larger marketings of most livestock products may contribute to some easing in prices later in 1961. Under present law, minimum price supports for 1961 production will be about the same as support levels for 1960.

Prices paid by farmers for commodities, interest, taxes, and wage rates have held relatively stable in 1960, at levels slightly above last year. The easing of inflationary price pressures suggests relatively stable prices in 1961 for production items purchased by farmers from the non-farm sector of the economy. Interest charges per acre, taxes on farm real estate, and farm wage rates are expected to average somewhat higher in 1961.

It now appears that realized net farm income in 1960 may equal or possibly exceed 1959's income. With prospects for relatively stable farm prices and farm cost rates, farmers' incomes are not expected to change much from levels in 1959 and 1960.

The author is Chief of the Farm Income Branch, Agricultural Economics Division, Agricultural Marketing Service.



trends and prospects for PORK consumption

by Earl E. Miller

HIGHER INCOMES and the rural-to-urban population shift have worked together in recent years to reduce pork consumption.

Except for the years 1951 and 1952, pork consumption per person has trended downward since World War II. From an average of 70 pounds per person per year just after the war, it has dropped to 65 pounds a person.

In 1960, pork consumption probably will be down another half a pound, and economists foresee about the same rate of consumption for 1961.

Higher incomes and a population shift to the cities are the two main reasons for this decreased demand.

People are earning more money now than they did 10 years ago, and as our national income has gone up, pork consumption has gone down. This does not mean that at any given time a high-income family may not buy more pork than a low-income family. It just means that, on the average, they do not.

Families with large incomes eat more meat, and they spend more money for it—including pork. But most likely their purchases will be beef, veal, and lamb. And the extra money will go for higher priced cuts, better quality, and meats with more service costs.

Last year about 1.6 percent of the consumer's disposable income went for pork. As recent as 1952, these purchases totaled 2.5 percent.

This despite the fact that pork prices have declined. Only twice in the past 10 years has pork cost more than beef, and these were in years of low pork consumption.

Together, low consumption and low prices signal a downward shift in demand.

Income, as we have said, is the most important factor affecting the demand for pork. But there are other causes as well—shifts in the makeup of the population, where it is concentrated, and what it does for a living.

Southerners, for example, have always been big pork eaters. Only in the South does pork generally top beef in consumption.

Farmers are another large user of pork. And here there is a definite change in demand. The farmer is moving to town. And, as he changes his domicile and his occupation, he also changes his eating habits. Hence, some of the decline in pork demand is due to the growth of cities.

Also, it's in the cities that you find the calorie-conscious office workers who tend to limit the amount of pork they eat.

And, with the widespread use of refrigerators and home freezers, there's a general trend toward the

use of fresh meats and away from cured pork items.

The question now is: Will the demand for pork continue to decline in the years ahead? Already AMS economists have predicted a further drop during 1961, and they aren't too optimistic about the years after that.

Pork, they say, will probably never regain the position it once held. Consumers are favoring more and more the leaner cuts of meat.

So, if the market for pork is to be maintained—even at present standards—the meat itself must be tailored to fit consumer preferences. That is, retail pork cuts should be leaner and tastier.

The meat-type hog is perhaps part of the answer. At any rate, it could do much to increase consumer acceptance of pork and pork products.

Do you think you spent \$100 on meat last year?

If you did, your meat bill was only slightly more than average. AMS economists figure the average person spent \$91 for meat in 1960.

This represented about 4.6 percent of his income.

It bought 138 pounds of meat—85.8 pounds of beef, 64.6 pounds of pork, 6.3 pounds of veal, and 4.6 pounds of lamb and mutton.

(Incidentally, that \$91 is exactly the same as the average for 1959 and 1958.)

The author is an analytical statistician in the Livestock Fats and Oils Section, Agricultural Economics Division, AMS.

by Raymond W. Hoecker

The Future for Food Retailing

rate or voluntary manner with a central organization.

But whatever its size or nature, each type of retail food store will carefully watch its operating costs. This, too, is a trend of the sixties.

The continual rise in wage rates (70 percent in the past 10 years) and similar increases in the costs of transportation, construction, and supply have made the retailer take a second look at the level of his productivity.

To cut costs and meet the competition, he is turning to more efficient methods of operation—greater use of mechanical handling of data and records, centralized handling of perishables, and more highly skilled and responsible personnel.

Within the past several years, productivity in the self-service meat department has increased over 25 percent through the use of improved work methods. Further research now offers additional increases through the use of machines for wrapping and weighing meat, trays for display, better film wraps, improved display cases, and the possible use of an agent to give meat greater shelf life.

Similar advances have occurred in the produce department. Research has here, too, materially increased



RETAIL FOOD organizations will, in the next few years, grow larger and more efficient; well-known brands will gain in importance; and there'll be a closer coordination between wholesaling and retailing.

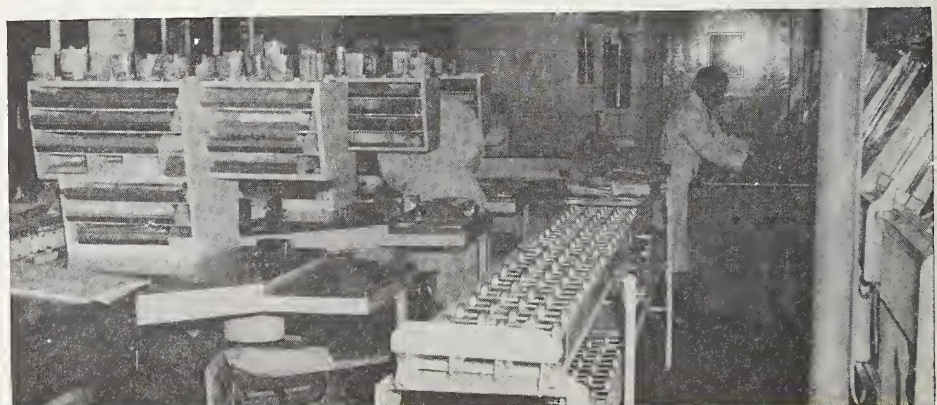
These trends—already underway during the 1950's—will continue into the present decade.

Large corporate chains will continue to absorb smaller chains and build new stores of their own. Co-operatives and other voluntary groups affiliated with wholesaling outfits also will continue to expand—again by

absorbing presently unaffiliated independents and, too, by increasing the size of their smaller stores.

At the same time, however, the small, convenience-type store will maintain its role in the distribution pattern—affiliated either in a corpo-

Designed for efficiency, this modern wrap station increases backroom productivity.



The author is Chief, Wholesaling and Retailing Research Branch, Transportation and Facilities Research Division, AMS.



Tray carrier for storing and moving produce from the backroom to the selling area.



Counter extensions attract customer's attention and offer variation to otherwise monotonous line of merchandise.



Produce weighing station should be located so clerk can do other jobs between customers.

handling efficiency—again over 25 percent in the past 10 years.

Further savings are available in the future through the use of trays for handling and displaying produce, weighing produce at the checkout stand, better films, and the use of agents to reduce growth of mold. And thanks to improved transportation, warehousing, and packaging—better quality produce is now appearing, and will continue to appear, in retail food stores.

Research has also led to other economies elsewhere in the supermarket. It has shown retailers how they can improve the handling of groceries, frozen food, dairy and bakery products.

Centralized preparation and packaging of perishables are within the foreseeable future. A little more research and it will be feasible for all produce, meat, and dairy products.

Store records will become more mechanized. Many of these may be patterned around a version of an electronic checkout which, in addition to making the checkout faster and more accurate, will make possible detailed item inventory control, automatic ordering, and central control of records for each department.

All of these things will increase store efficiency. But along with them are needed a skilled labor force.

The time when "anyone" could be a grocery clerk is fast disappearing. Firms are finding it necessary to hire qualified personnel and to give them an increasing amount of training.

In the future, stores will be staffed by a relatively small number of "specialists" supervised by a well-trained and competent manager.

Still another phase of the rapidly changing retail food marketing business is the trend toward mass merchandising. Personal selling is becoming a thing of the past. In its stead, there has appeared what is known as pre-selling—"selling" an item to the consumer before he even reaches the retail store. This is done, primarily, through special emphasis on brand identification.

At the store, more shelf space is going to those items with a fast turnover. Also, retailers are paying more attention to the layout of their sales area with an eye toward developing new and better ways to influence and sell the customer.

To compensate for an increasing tendency to lose the store's identity, customer services will be further emphasized—services such as credit cards, lounges, carryout, and stamps.

Behind the scenes, another "revolution" in food marketing is taking place. Wholesalers no longer sell to the retailer; they sell *through* him. That is, they are very much concerned with what happens to their products after they leave the wholesale house. They are gearing their operations to include item pre-testing and advertising.

Sometimes this close coordination between buyer and seller extends back to the processor, or even to the producer. As firms increase in size, they tend to turn directly to the source of supply—to producers who know and are able to meet the retailers' need for a uniform, high-quality product.

So, the food distribution system has experienced many changes—changes in size, in handling methods, and in office management.

Most of these are the result of previous research—both public and private.

Mistakes have become too costly to rely on the old trial and error methods. Each operation is now highly specialized, with opportunities for great economy—or great losses.

In the years ahead, there will be an increasing quantity of research on all phases of distribution.

In the area of food wholesaling and retailing, much of the research on broad industry problems and those problems that require intensive study will be done by public agencies. Individual firms will research those problems that involve adapting the broader research findings to their own operations or will work on relatively short-range problems.



Attractive store with well-arranged merchandise encourages more complete customer shopping.

Tobacco farmers can look forward to increases in their domestic market as

CIGARETTE CONSUMPTION CONTINUES TO CLIMB



by Arthur G. Conover

ABOUT 487 billion cigarettes went up in smoke last year as the Nation's smokers puffed away at a record-breaking clip.

The 1960 total is up 20 billion from that of 1959 and 92 billion more than in 1955.

On the average, each of the 60 million men and women cigarette smokers in this country lit up a cigarette about every 45 minutes of their waking hours.

All except a small fraction of these cigarettes came from U.S. factories. The United States imported only

about 12 million cigarettes in 1960.

We also exported about 20 billion to foreign countries and shipped over 2 billion to Puerto Rico.

The United States has long been the leading exporter of leaf tobacco and in recent years has led in the export of cigarettes. Shipments go to about 120 foreign countries and territories.

However, some U.S. companies have been licensing the manufacture of their brands in several foreign countries and this practice seems likely to expand.

At home, cigarette consumption is expected to continue to grow and reach a new high with each succeeding year. A conservative estimate places the number of people smoking cigarettes daily by 1965 at 67 million—about 50 percent of the U.S. population 15 years of age and over.

If the daily rate of consumption stays the same, total consumption by 1965 may exceed 545 billion cigarettes, up at least another 55 billion from 1960. (This projection, of course, does not take into account the possible effects of changes in consumer incomes, cigarettes prices, the level of all consumer prices, and such factors.)

U.S. smokers in 1959 spent about \$6.6 billion on cigarettes—2 percent of their total disposable income. About \$2.9 billion of this went for excise taxes to Federal and State governments. Only North Carolina, Colorado, and Oregon do not tax cigarettes, although several local governments in Colorado do.

U.S. growers of flue-cured, burley and Maryland tobacco received about \$750 million for the tobacco used in cigarettes last year. Another \$100 million was spent on imported tobaccos for blending. (Included in this figure are the costs of import duties.)

Most of the foreign tobaccos used in the cigarette blends come from Turkey and Greece; smaller quantities are imported from Yugoslavia, Italy, Cyprus, and Syria.

In this country, flue-cured, the leading cigarette tobacco, is grown in the eastern seaboard States from Virginia to Florida. Burley comes mainly from Kentucky and Tennessee, with sizable quantities also grown in Virginia, North Carolina, Ohio, Indiana, Missouri, and West Virginia. Maryland tobacco, of course, comes from Maryland.

While tobacco blends for major brands vary somewhat, they usually contain these U.S. tobaccos plus imported cigarette leaf. On the average, the finished American cigarette is composed of about 56 percent flue-cured, 32 percent burley, 2 percent Maryland, and 10 percent imported types.

From 1955 to 1960, cigarette output rose about 24 percent but the amount of leaf used increased only 7 percent. Due to newer methods of processing and the smaller tobacco requirements of filtertips, the domestic outlet for leaf has not expanded as much as the number of cigarettes.

A continuing rise in cigarette consumption will, however, mean that tobacco farmers can look forward to moderate increases in their domestic market.

MARKETING COSTS VERSUS MARKETING SERVICES



by Kenneth E. Ogren

EVERYBODY talks about the rising costs of marketing. But not everybody knows exactly what these costs are or how they affect consumers, marketing firms, and farmers.

A few explanations are in order.

Marketing is the sum of all services performed after food products are sold by farmers—the processing and distributing services necessary to get products to consumers at the time, at the place, and in the form they want them.

Marketing costs are the payments or charges for these services—the costs of labor, transportation, containers and supplies as well as the taxes and profits of marketing firms.

For *consumers*—marketing costs may add to the price of food. Shoppers pay, on the average, more than 60 cents of the food dollar for marketing costs. For many foods, it amounts to 75 or 85 cents.

High marketing costs may squeeze the shopper's food dollar so she can buy less food—or, more likely, less of the food she really prefers—as well as less of other consumer goods and services.

For *marketing agencies*—higher wages, higher costs of supplies and utilities, and higher taxes may result in lower profits or perhaps no profits

at all. With less profit, less money is available for reinvestment in plant and equipment.

For *farmers*—higher marketing costs may cut the farm price so deeply that the farmer is unable to meet production costs. Unfortunately, these costs of production usually rise at the same time as the costs of marketing climb upward.

Thus, it seems, no one likes marketing costs—neither the farmer, the consumer, nor the marketing agency.

But let's take another look at the situation. Marketing costs also pay for services that add a plus value to food products. Costs are "bad" only when these extras are not wanted by consumers or when these services can be provided more efficiently and at less cost.

Some marketing services are obviously necessary if farm products are to reach retail outlets in forms acceptable to consumers. Transportation is, of course, the first requirement, and processing of some sort usually is another.

Many other services, such as the washing and topping of carrots and sacking them in cellophane bags and the hydrocooling of lettuce, help extend farm markets both geographically and seasonally.

These and similar services cost money. They may add to the retail price. But they make foods more attractive to consumers and reduce homemakers' time and costs in kit-

chen preparation of foods.

Likewise, higher wages to workers may add to costs, but they also attract more efficient workers. Greater efficiency may offset part or all of the increased wage cost.

Any increase in marketing costs, however, is open to criticism. And, marketing costs for food have risen almost steadily since the end of World War II.

Much of this increase has paralleled the general rise in price and cost levels in the economy during this period. But the cost of providing services has not risen as fast as the cost of the labor and other items used by marketing firms.

For example, hourly earnings of food marketing employees in 1959 averaged 70 percent higher than the 1947-49 average but the labor costs per unit of product marketed was up by only 34 percent.

The rise in marketing costs in 1960 was less than in any preceding post-war year—less than 1 percent. (This measurement is based on a comparison of the retail store cost of a typical family market basket of foods with the gross returns to farmers for the equivalent quantities of farm products represented in this market basket.)

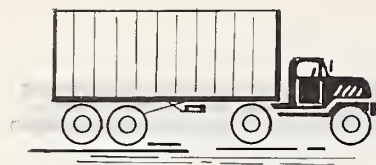
The slackening of the rise in the spread between farm and retail prices of food products can be attributed to more efficient ways of processing and

(Continued on page 19)

The author is Director of the Marketing Economics Research Division of AMS.

TRENDS and PROSPECTS

in T



JET SERVICE FOR AGRICULTURE

by John H. Hunter, Jr.

SOMETHING over 16,000 tons of agricultural products took to the airways in 1959 on planes of the Nation's major air freight carriers, AMS marketing specialists report.

This very small but growing portion of agricultural traffic got its big start right after the war and had another boost with the advent of the jet age in 1959. The tonnage for 1960 is expected to be 20 percent over the 1959 total.

Despite its rapid growth, air freight has been largely a sideline to the more glamorous air passenger service, and even today there are no specially designed cargo planes to handle the traffic. Half the air traffic is shipped aboard passenger-cargo planes and the rest goes aboard all cargo converted passenger craft.

However, a number of turbine-powered planes especially designed for cargo service are on order for 1961, which may give the freight service a further boost.

If air freight continues its spectacular rise, cargo ton-miles may well exceed passenger ton-miles by 1970.

The principal drag on air freight to date has been the cost of the service. For instance, it cost about \$2 to ship a hundred pounds of asparagus by rail from San Francisco to Boston in 1959. By air, the bill was over \$17.

The difference can, however, be much smaller. A hundred pounds of strawberries made the trip from Miami to New York by air for slightly over \$7; by land the cost was a little under \$3.



Luxury items such as cut flowers, fancy quality produce, and fresh seafood have taken to the air. By air freight, they get faster service, better protection. Average rate is 22 cents a ton mile.

The overall rate for air freight is currently about 22 cents per ton-mile. With new turbine-powered cargo craft, airline officials expect to be able to cut their rates in half, making them more competitive with surface rates.

However, the rates for air freight do not necessarily have to match surface rates. Speed, lower packaging costs, and less spoilage are sales features for the airways when they go after the business of premium produce and fresh flowers to high-income consumers in large urban areas.

As the air freight business grows in experience it should find solutions to problems that still hamper its operations. Air freight still needs handling equipment to match jet-age carriers, crates and cartons tailored to the needs of airways, greater cargo capacity in the planes, more reliable service for its customers, and a general improvement in the use of planes and handling facilities.

The two big problems for the moment are planes and handling methods. The companies must decide between rebuilt passenger planes and

new cargo planes when adding to their fleets. And they have to develop better ways to handle the cargo.

Freight is still unloaded like passenger luggage. Workers load the cargo one piece at a time from small wagons through an opening in the underside of the planes. The same time-consuming procedure is followed for unloading. The new cargo planes will swing open at the tail to permit rapid loading and unloading of pre-packed containers.

Better packaging would cut down on dead weight and space taken up by containers and also save time in preparing the products for shipment.

Temperature is another problem for the shippers. The airlines are now looking for better ways to adjust the temperature to the commodity. Strawberries, for instance, stay fresh at one temperature, while tomatoes demand another. Both must often be accommodated in the same space.

With such improvements the air freight industry can look to a business future that matches its high-powered craft ■

The author is a transportation economist in the Transportation and Facilities Research Division, AMS.

Supporting Agricultural Produce



TRUCKING TAKES TO THE SEAS

by Joseph R. Corley and Ralph C. Foster

FISHYBACK shipments are taking time and labor out of the water transportation of agricultural products and putting dollar savings and quality back in.

Trucks hauling farm products pull up directly alongside ships at the docks, and cranes lift the entire "body," or van container, onto the ship—leaving the undercarriage and tractor behind. At the other end of the voyage, a crane swings the van container from the ship to an awaiting undercarriage and tractor which delivers the cargo to the market.

If needed, the van can be refrigerated while on shipboard.

Farm products that travel by the new "fishyback" method can be loaded on board ship eight times faster than by conventional loading methods, according to AMS researchers.

Fishyback service in effect wraps up the entire farm-to-ship-to-market cycle in one big sea-going package. Once the produce is loaded and sealed into the van containers at the farm or packing plant, it needn't be touched until unloaded at final destination.

This procedure does away with unloading at the warehouse, reloading for the trip to the dock, handling from dock to ship, and then back again to a carrier for the final trip to market.

The elimination of this complex chain of handling results in less damage to the shipment and near-elimination of pilferage. These features enable the product to arrive in better condition, and, as an added advantage, to travel under lower insurance rates.

There's another time and cost saving feature associated with fishyback service. Carriers offering this service find it easier to gather their cargo at one centralized port, thus cutting down on the number of calls the ship must make.

Early fishyback shipments were made in special ships converted from wartime LSTs. Truck trailers were rolled directly on the ships and their undercarriages took up valuable cargo space. Few ports had the facilities to accommodate the LSTs.

The newer container-ships, specially adapted for hauling van containers, use cranes for a lift-on, lift-off operation. And the undercarriages are left behind.

Other ships still use the roll-on, roll-off method, but forklift trucks perform the loading and unloading with only the van containers being

transported overseas.

There are now about 17 companies offering fishyback service from ports on the Atlantic, Pacific, Gulf, and, more recently, the Great Lakes. As recently as 1955, only 3 of these companies offered this service on a regular basis.

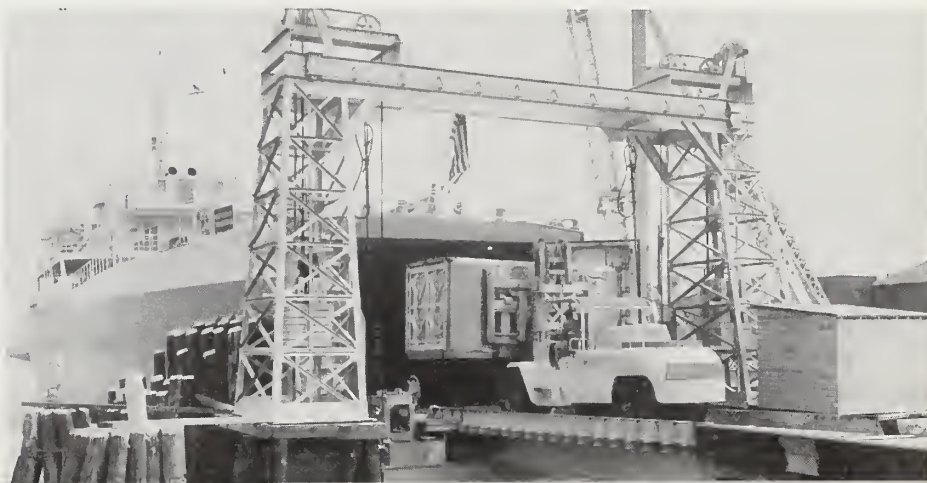
Seagoing containers loaded with fresh fruits and vegetables, flour, feed, and frozen foods are swinging aboard ships from San Diego to Seattle, bound for Alaska, Hawaii, Japan, and the Philippines. Tomatoes, refined sugar, coffee, fresh pork and eggs, tobacco, frozen foods, and even Christmas trees are moving between Gulf, Atlantic, Caribbean, and South American ports.

Fishyback shipping can expect to expand even more as the industry solves its remaining problems. A major one is the lack of standardized van container lengths. If the industry could settle on standard lengths, much of the present duplication of equipment could be avoided.

With difficulties such as this out of the way, more ocean carriers would offer container service—despite the high cost of conversion ■

The authors are transportation economists in the Transportation and Facilities Research Division of AMS.

Van body from semitrailer moves directly into hold of ship. At end of voyage, it will be put on another undercarriage and tractor which will haul cargo to market.





ON INLAND



Low-cost service of inland water routes attracted 12 million tons of farm products in 1958. Number of towboats up 14 percent while barge fleet has grown 30 percent. Average distance per ton hauled is twice what it was decade ago.

by Robert M. Bennett

LOW-COST service is attracting more and more tonnage to the inland waterways, according to Agricultural Marketing Service economists.

Agricultural traffic over these routes nearly tripled between 1948 and 1958. Some 41½ million tons of farm products moved along inland waterways in 1948 compared with more than 12 million tons in 1958. Over half of this traffic was grain and grain products (excluding soybeans).

The big reason for the growth in traffic is the lower rates which currently average only a quarter as much as comparable rail charges.

The author is a staff member of the Transportation and Facilities Research Division, Agricultural Marketing Service.

Such a favorable rate advantage was in part made possible by major improvements in vessels and equipment. Since 1948, following a change-over to diesel power, the number of towboats on the commercial river routes has increased about 14 percent. The barge fleet has grown by 30 percent, while average barge capacity has risen 17 percent.

The use of diesel-powered tows has resulted in fewer towboats now handling larger pay loads. And the average distance per ton hauled has increased 92 percent.

These economies have been passed on to the shipper. And agricultural interests have been quick to realize the savings. Between 1952 and 1959, about 110 plants (principally grain elevators and storage facilities) were built or expanded along the inland waterways.

The Federal Government plays a dominant role in the maintenance and expansion of our inland waterway system. The Government has already approved the modernization of some 3,200 miles of commercial water routes and authorized another 1,300 miles of new waterways.

Other proposals would bring an additional 1,700 miles of new water routes into the Federal system and improve another 6,800 miles of river channels. Flood control, irrigation, and power projects are also included in this development program.

With demand for low-cost transportation on the increase, most regions along the waterways look to a bright future. Major improvements along the Illinois are proposed to handle the 65-percent increase in traffic expected by 1970, and commercial use of the Missouri as far as Sioux City, Iowa, should be a reality by 1967.

A series of modern lock facilities is gradually replacing the outmoded navigational system along the Ohio River. New construction has already improved traffic conditions on the Warrior-Tombigbee Waterway in Alabama. A proposal calling for the connection of this waterway with the Tennessee River is now under consideration.

Improvements in progress along the Chattahoochee River will provide an all-water route from the Gulf to Columbus, Ga., and Phenix City, Ala., around 1963. Development of the Arkansas also is underway. Long-range plans call for a navigable channel extending 520 miles downstream from Catoosa, Okla., to the junction with the Mississippi.

Fort Worth and Dallas in the Southwest may eventually become major grain shipping ports if the Trinity River program is developed from the Gulf. And Congress is reviewing a \$1 billion proposal for improvements on the Columbia and Snake Rivers in the Far West. This would extend commercial navigation as far inland as Wenatchee, Wash., and Lewiston, Idaho.

Altogether, the U.S. Army Corps of Engineers—the men responsible for planning and constructing our water routes—expects to spend some \$400 million a year for the next 20 years on many of these projects.

With opening of Seaway, shipments of grain moving directly overseas jumped from 4 million to 90 million bushels a year.

Impact of St. Lawrence Seaway on Grain Transportation

By Nicholas M. Thuroczy

IN APRIL 1959, icebreakers led a fleet of freighters into the St. Lambert lock on the St. Lawrence River. The long-awaited, much heralded St. Lawrence Seaway was open to ocean-going traffic.

Predictions indicated a new age in grain transportation.

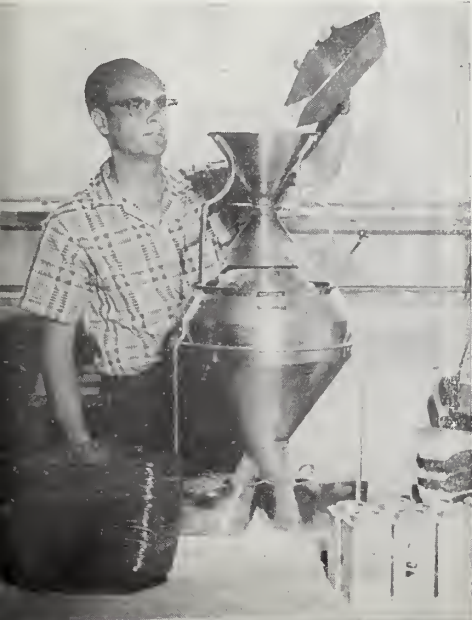
Now, after two seasons of operation, many of these predictions are coming true, causing repercussions in ports from the Atlantic to the Gulf.

In 1958, direct Lake shipments of grain to overseas destinations totaled about 4 million bushels. With the opening of the Seaway, traffic moving directly overseas jumped to 90 million bushels, most of which went to Western European ports.

Nearly all the Lake exports to West Europe would have moved through Atlantic ports if it hadn't

The author is an agricultural economist in the Marketing Economics Research Division of AMS.

At Beie Comeau, Quebec, USDA inspector divides grain sample from ship bound for Europe.



been for the Seaway. On the other hand, the Seaway had only minor impact on the ports along the Gulf. The Gulf still seems to be a cheaper route to many European ports for a large part of the midwestern grain output. And the Seaway had little or no effect on Pacific Coast exports of grain. Needless to say, the Atlantic ports and railroad lines have not been idle in this competition for grain shipments.

To meet the increased competition of trucks, barges, and Seaway ships, railroads have reduced both domestic and export grain rates. Each reduction is aimed at regaining traffic between specific origins and destinations, on specific grains hauled by competing carriers.

For example, grain rates have been lowered to meet truck competition from points in Minnesota and North and South Dakota to the Minneapolis market for subsequent movement beyond.

To meet barge competition to the Gulf and Seaway (on export movements), eastern railroads reduced their grain export rates from Illinois, Indiana, Ohio, and Michigan to North Atlantic ports. These reductions were as much as 20 percent and provided for routing via Toledo, Buffalo, and other established markets.

On lake shipments to Buffalo, railroads operating east of that port now also offer reduced export rates to North Atlantic ports.

Largely as a result of these lower rail charges, the rate of increase for grain shipments via the Seaway may slow down for the next few years. Ultimately, however, it should increase considerably.

Export routes for American grain

were changing long before the St. Lawrence Seaway was opened to ocean-going traffic. Despite a continuous increase in grain exports from the United States, the importance of Atlantic ports for grain exports has been declining steadily in recent years. In 1956, Atlantic ports exported 277 million bushels of grain. In 1959, the annual volume of grain shipped out of Atlantic ports was only 168 million bushels.

According to marketing research men, Atlantic ports as a whole need a minimum annual volume of 250 million bushels of grain a year to keep their 15 port elevators going at a profit. Any prolonged period with less than this volume may cause financial difficulties for the elevator operators—unless they can obtain grain for long-term storage.

Because of the competition between grain carriers and existing port facilities, the researchers foresee short-term gains in export volume for Seaway and Atlantic Coast ports with Gulf ports losing a little of their volume. But in the long run, Seaway and Gulf ports will take the lead in the Western European traffic.

In addition, the varying advantages of rail freight rates for grain should even themselves out in time to the net gain of Seaway and Gulf ports.

In the next few years, exports of grain to Western European ports will increase along the Seaway and Atlantic. The volume of grain destined for this market may slow down a little in Gulf ports. But unless the picture changes radically, the established Atlantic ports will lose their temporary advantage and Gulf ports will regain whatever volume they lose. And the Seaway traffic should continue to expand.



QUALITY CONTROL CHART

gives packers a better way to control amount of fruit going into each can



Statistical charts help a packer control the amount of fruit that goes into each can.



Conventional method for checking fruit content has been to measure drained weights.

by H. H. Weatherspoon
and R. P. Bartlett, Jr.

PROCESSED foods inspectors in USDA's Agricultural Marketing Service are now using statistical quality control charts as "road maps" to help fruit canners pack a more uniform amount of fruit in each can and meet fill requirements for containers.

The quality control chart technique provides a better way for the packer to control the amount of fruit that goes into each can. This enables him to pack the required "well-filled can" without overfilling or underfilling. Also, with less variation in fruit weight between cans, the packer gets closer control of the sweetness of the fruit.

The "road map" technique is being used by AMS inspectors in plants using continuous or inplant inspection. But, AMS makes the procedures and charts available to other plants which do not employ this type of service.

AMS first tried the statistical program on an experimental basis for determining fill weights for canned peaches during the 1959 season and again on several other canned fruits in 1960.

With the cooperation of fruit canners in California, the program proved very successful. So successful, in fact, that the plan is expected to be used for other food products in coming seasons.

Under this new technique the inspector pulls frequent samples of cans off the packing line. This is done right after they have been filled with

fruit and before the syrup has been added. The filled cans are weighed and these weights are plotted on a control chart. And the chart posted in the plant.

Deviations from the normal trend show up on the control chart "road map." The workers filling the cans see when they are either under-filling or over-filling and the situation can be corrected immediately.

This is a big advantage for the packer, because he can get a higher percentage of cans within the weight requirements.

The conventional method for checking fruit content is to measure drained weights. Inspectors take a sample of the finished cans as they emerge from the cooler and just prior to casing or stacking. The following day the cans are cut open and the fruit inside weighed and graded for quality.

One problem with this system is that the weight of the fruit changes during and after the canning process. If the canner wants to keep his products separated by grade, he has to wait until the inspection results are received the next day before he can stack the product. This ties up valuable floor space and adds another handling operation to his costs. Worst of all, if the inspector should find that the product fails to meet the recommended drained weights, it's too late to correct the situation.

Cutting cans is expensive, too, because the sampled cans are ruined. Thus, the size of the sample has to be kept relatively small.

But with the quality control chart system, it's a different story. When the inspector checks the fill-weights and then evaluates the quality from a sample of the cans as they come from the cooler after cooking, he has all the information he needs to certify the pack.

Fewer cans are destroyed in making a complete grade determination under the new system. Packers can also figure on more efficient warehousing, with no products tied up awaiting grade determination.

The authors are staff members of the Fruit and Vegetable Division of AMS.

Fat content of milk sold by farmers has declined about 5 percent in past decade. Solids-not-fat presumably also declined somewhat.



Milk from cows
is still Nature's
most perfect food
but lately...

Nonfat content varies in same direction as fat, but usually only about a fifth as much.

Fat Content of Milk Is Declining

MILK from cows has been used as food by man for centuries. It is commonly described as Nature's most nearly perfect food because of its wide variety of quality proteins, essential minerals, and some vitamins. The fact is, we probably still do not know all the reasons for the high nutritional qualities of milk.

But it is just within the last 100 years that the composition of milk has come to be regarded as important. "Milk was milk"—oftentimes with a little water added. Even this apparently was not too objectionable so long as the color and taste were still there.

First strides in the measurement of solids content of milk were made around 1890. It soon became apparent that the economic interests of buyers and sellers could be safeguarded only by knowing the solids content, particularly of fat.

Composition of milk varies considerably among cows, even of the same breed, or of the same strain within a breed. Milk as sold by farmers may contain 3 percent fat, or even less, to as much as 6 percent or more. The solids-not-fat content varies in the same direction as fat content, but over a much smaller range—in most cases between 8.5 and 10 percent.

A technique for easily measuring fat content of milk was made available in 1890 by S. M. Babcock of the Wisconsin Experiment Station. Then, as now, fat was the most valuable ingredient of Milk. Use of this technique also facilitated improved selection of dairy cattle and standardization of dairy products.

There is no comparable practical method for measuring solids-not-fat. But this can be established within limits by association with the fat test. Nonfat content varies in the same direction as fat but, on the average, only a fifth as much.

The fat content of milk sold by farmers has declined

about 5 percent in the last decade. Solids-not-fat presumably also declined.

The motivation for the reduction in fat content has come mainly from the production side. Farmers have learned that the most profitable test usually is that on which payment is based in the local market. Farmers have shifted to cows giving a lower test rating—every State average shows a decline from the past decade.

This decline does not mean that consumers are not getting their money's worth. Both fluid and manufactured dairy products must have a certain solids content before final processing or packaging.

Processors can protect their own interests. They, in effect, deal in solids content. The water—at least 87 percent of milk weight—is an incidental consideration.

The person most likely to be affected financially is the individual farmer. There is a wide dispersion in relationship of solids-not-fat to fat content, and precise adjustments for fat content will not always assure equitable pay for solids-not-fat.

Farmers as a group get adequate compensation. But until more is known about the relationship of solids-not-fat and fat content and a more practical testing method is available, individual farmers cannot be certain that they are being properly compensated for the solids-not-fat contained in the milk they produce.

A global effect of the decline in fat test is the reduction in surplus of milkfat. Last year the price support purchases of milkfat would have taken between 7 and 8 percent of production if the fat test of 10 years ago still prevailed. Actually, price support purchases only took 2.6 percent. The effect on the solids-not-fat situation is similar, but less pronounced, reflecting the one to five relationship. Moreover, farmers are selling an increasing proportion of their production of solids-not-fat.

THE EMERGING STRUCTURE OF THE BROILER INDUSTRY

by Fred L. Faber



Small operator, working independently on a limited budget, will find it increasingly difficult to compete in broiler market.

THE BROILER INDUSTRY is becoming more and more like the automobile industry. Consider these similarities: Both produce for a mass market, both require large capital investments, both are constantly striving to produce a better product to satisfy consumer's demands, and both (at certain stages) have relatively few firms that produce the newly designed models.

For instance, years ago consumers did not like dark pin feathers on the birds they purchased. So the breeders produced white feathered varieties and strains. Poultry processors also favored white-feathered birds because they can be dressed faster than dark-feathered birds. Thus, primary breeders are trying continually to improve on last year's model so as to provide a better end product and to remain ahead of their competition—other primary breeders.

Outstanding gains in efficiency have been made by the broiler industry. The quantity of broiler meat produced from a gallon of feed has

gone up much more than the miles obtained from a gallon of gasoline. Also the primary breeders have been able to produce chicks that are more and more disease resistant and reach marketable size in 7 to 9 instead of 12 to 14 weeks.

The industry that is producing and marketing broilers is large and complex. It has vast capital requirements and it employs staffs of highly trained professional personnel. Competition has forced relatively small breeders, hatcheries, and processors into mergers or consolidations with large firms that can meet the capital and other requirements of the competitive struggle.

The following sections describe briefly the operations and functions of the major segments of the industry:

Primary Breeders

On their home farms the primary breeders maintain many thousands of birds. Numerous strains or stocks with particular characteristics are kept for use in new mating combinations. Also, they have large capital investments in land, buildings, and equipment. The largest breeders

maintain research departments and diagnostic laboratories staffed by teams of geneticists, veterinarians, and other experts. Breeding and accounting records are so voluminous that it is necessary for them to use data processing equipment.

In recent years there have been many mergers among primary breeders resulting in fewer and larger firms than formerly. Probably the main reason for the mergers has been the need for large capital investments.

For example, one of the primary breeders recently announced a new crossbred female line which was developed over a 5-year period at a cost of \$1 million.

Although the function performed by primary breeders is to produce better birds, a farmer with cash in hand could not buy a thousand broiler chicks from them because their product is not for sale in the usual sense. Their end-product is hatching eggs or baby chicks which go to multiplier farms.

Multiplier Farms

The name is just what it suggests. At the multiplier farms of the primary breeders, hatching eggs or chicks are obtained from the home farm. The chicks are grown to maturity and mated to produce a larger

The author is an agricultural economist in the Marketing Research Division of AMS.

volume of hatching eggs than can be produced at the home farm. Primary breeders of female parent stock then sell the hatching eggs or hatch the eggs themselves and sell pullet chicks to commercial hatchery supply flock operators. These pullet chicks will become the hens that produce the eggs from which broiler chicks are hatched.

Similarly, primary breeders of male parent stock sell hatching eggs or hatch the eggs themselves and sell cockerel chicks to commercial hatchery supply flock operators. These cockerel chicks become the roosters that are used to mate with pullets that produce the eggs from which broiler chicks are hatched.

The largest primary breeders have several multiplier farms of their own or under working agreements with other firms in the industry.

Commercial Hatcheries

Historically, commercial hatcheries have maintained their own breeding programs and supply flocks to obtain hatching eggs. Nevertheless, the competition to produce a better broiler chick and the large capital requirements of a primary breeding program have been compelling forces to bring about a situation where more and more commercial hatcheries have entered into franchise arrangements, authorized distributorships or associate hatchery status with primary breeders.

Now many commercial hatchery operators obtain hatching eggs or pullet chicks from multiplier flocks of a primary breeder of female parent stock for their supply flocks. They raise them to maturity and send them out to be raised by their supply flocks.

Similarly, hatchery operators obtain hatching eggs or cockerel chicks from a multiplier flock of a primary breeder of male parent stock. They raise them to maturity or send them out to be raised.

Thus, through franchising contracts commercial hatchery operators arrange for their supply flocks to produce hatching eggs based on improved female strains from one basic

breeder and improved male strains from a different basic breeder.

A national survey of commercial hatcheries disclosed that 280 out of 643 hatcheries replying to a questionnaire had franchising agreements with breeders. Many had franchises with more than one breeder so that they could offer improved lines of broiler chicks, egg-type chicks, and turkey poults.

Hatching eggs from the supply flocks are hatched in the commercial hatcheries to produce broiler chicks. Usually no sexing is done since male and female broiler chicks are raised by growers to a marketable age.

Broiler Growers

The function of broiler growers is to raise chicks to marketable size in 7 to 9 weeks. Premiums are paid for low mortality and low feed conversion. About 95 percent of the broilers are grown by producers who are part of vertically integrated organizations. These may involve feed dealers, processors, and hatcheries as well as growers.

Commercial Slaughtering Plants

The plants receive live birds, slaughter, and prepare them in ready-to-cook form. A recent study showed for 1957 that 83 percent of the live weight of young chickens slaughtered in commercial plants was prepared as fresh dressed ice packed whole birds. The birds are sold primarily in straight truckload lots to large volume distributors such as wholesale receivers and the regional and national chainstore organizations. Modern poultry processing plants require large capital investments and staffs of trained personnel. Competition among processors is very keen.

Large-Volume Distributors

An increasing proportion of the ready-to-cook broilers has by-passed wholesale receivers in recent years and has gone directly to chainstore warehouses or even to large individual supermarkets. Of the three types—regional or national chains, voluntary chains, and cooperative chains—the largest growth in total sales of all groceries has occurred in the last

two groups. Probably this is also true for sales of broilers.

Retail Stores

The final link in the chain between the primary breeder and the consumer is the retail store. Most whole birds have been cut up and tray-packed in the retail stores. Efforts are being made to do this at the processing plant, but retailers have been slow to accept the idea.

Implications for the Future

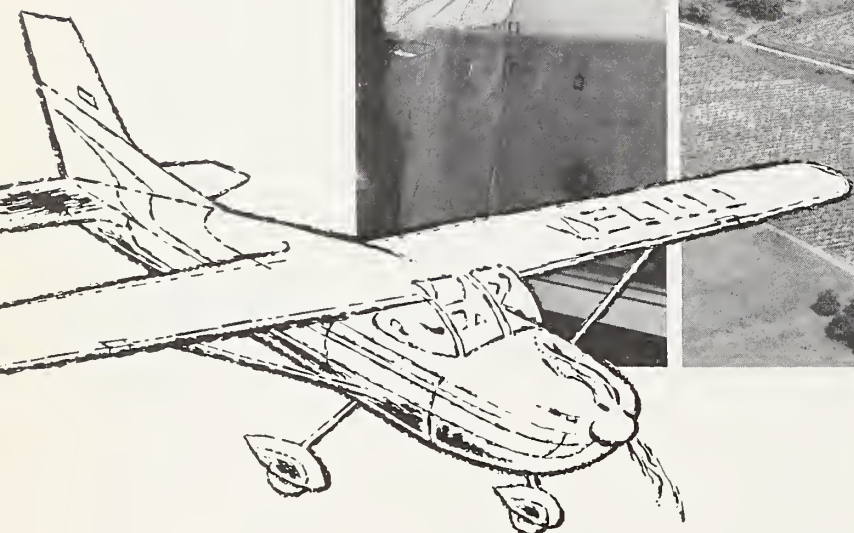
As the emerging structure of the broiler industry becomes more and more apparent, at least three outstanding aspects foreshadow important economic consequences. The primary breeders will continue to strive to produce a broiler that meets consumer and large-volume buyers' specifications and demands. Second, producing the new broiler models will continue to require large capital investments. Third, there will be essentially only three areas of competition in the mass market: (1) among primary breeders and other firms related through integration to produce a better broiler chick; (2) among processors and their firms related through integration to produce and sell a finished product to large-volume distributors; and (3) among chain retail store organizations to sell to consumers.

Thus, small-volume firms, under-capitalized firms, and those not related to an integrated organization will find it increasingly difficult to compete. This will become apparent particularly during prolonged periods of low prices or low returns.

Broiler chicks now reach marketable age in 7 to 9 weeks instead of 12 to 14 weeks.



Aerial photographs which show the amount of grapes "laid" to raisins give California producers, winemakers, and dried fruit packers latest information on how harvest is progressing in area.



Crop reporting takes to the **AIR**

by James S. Livingstone

THE California Crop and Livestock Reporting Service literally "got off the ground" when it took to the air and photographed the sun-drying of grapes into raisins during the 1960 harvest in the San Joaquin Valley.

This notable "first" in objective methods of crop estimating involved five flights between August 26 and September 19. These flights covered a three-county area where about 95 percent of the State's raisin production is scattered through 200,000 acres of vineyards.

The survey was made to get an accurate, early-season estimate of how much of the raisin-variety grape crop (mainly Thompson Seedless) would be made into raisins and how much would remain for crushing into wine.

The author is Chief of the Western area office of the Marketing Information Division of AMS.

Each year producers must decide which outlet will bring the best return. It's an economic gamble, and it's compounded by the always-present gamble with the weather since early-season rainfall is ruinous to raisins drying in the open.

Winemakers and dried fruit packers also must have some reliable basis for the prices they offer producers—for they, too, will share in the crop.

The crop report gives all three—the producer, the winemaker, and the dried fruit packer—the earliest possible information on the raisin "lay."

Air flights last year offered even faster service.

Within two hours after the plane returned, the films had been developed and counting was underway. A specially trained crew from the office of State Statistician W. Ward Henderson in Sacramento performed most of the task in a makeshift "laboratory" at the Oakland International Airport.

The staff worked all night so that by morning it could issue the latest count of the raisin "lay."

The project involved painstaking examination, under pressure of time, of scarcely-dry strips of flight film to spot vineyards with grapes laid on trays between the vines, to measure the acreage, and to actually count the trays.

As the harvest progressed, new photos were cross-checked with photos from earlier flights. This was to keep track of the acreage where the sun-drying was completed and the raisins, rolled in paper trays, had been tucked in the shade under the vines out of sight of the aerial camera.

To finance this special project, the California Wine Advisory Board made funds available to the State department of agriculture.

Aerial photographs and objective estimates give the industry additional information for setting a price for fresh grapes for wine. This same information also aids producers and dried fruit packers who are interested in equitable utilization of the total grape crop.

The air flights indicate how the raisin harvest is progressing. This year, for example, they showed the following acreage laid to raisins:

August 26—24,300

September 2—66,100

September 6—83,000

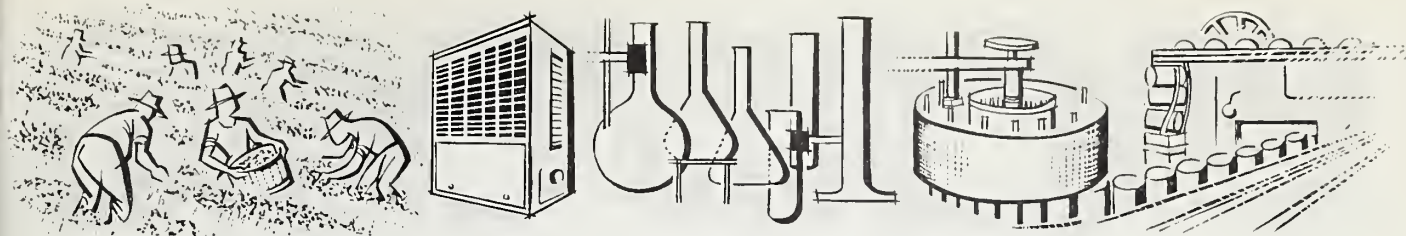
September 11—86,000

September 19—91,000

As can be seen, an abrupt slowdown occurred between September 6 and September 11, followed by a further increase the following week.

Normally, September 11 marks the deadline for starting raisins to dry because of the rainfall hazard. This year, however, a number of producers evidently felt that, with only 86,000 acres laid to raisins by September 11, production would be relatively light. It looked like the price for raisins would be more favorable than for fresh grapes for wine. And they decided to risk the threat of rain at that late date.

(P.S.: They made it!)



The Changing Market

Output Per Manhour

More capital invested per worker, better training for labor and management, economies of scale, and particularly new technology have increased output per manhour in the food processing industry nearly 40 percent since 1947-49, according to a study made by AMS economist William H. Waldorf.

Total output for the period rose about a third, while hours worked per employee dropped slightly.

The study showed that the rise in output would have been even greater except for a shift to manufactured products requiring somewhat more labor per unit of output.

The output per manhour has grown at about 3 percent a year since 1947, or roughly the same rate as in the rest of the private nonfarm economy. Because of greater increase in capital invested per worker, the growth in output per manhour has been more than twice as great in farm production as in food processing.

Hourly earnings of workers in the food processing industry rose about 80 percent from 1947-49 to 1960. This increase was part of the sharp postwar increase in wage rates in manufacturing as a whole.

Labor costs per unit in food processing, on the other hand, were up only 30 percent because of increased output per manhour.

Nonlabor charges per unit of output, which include profits, depreciation, and advertising rose somewhat faster than unit labor costs.

New techniques in grading, contin-

uous processing, bulk handling, and electronic controls of temperature and humidity, as well as other technological improvements, have combined with new products like frozen foods and prepared flour mixes to boost the workers' output.

This study covers only factory processing of food grown on American farms for domestic use and export. It does not include eggs, fluid milk and cream, seafood, beverages, and imported foods.

The rise in total unit processing charges—labor costs plus nonlabor—increased the farm-wholesale price spread.

Checking Purity of Grass Seed

AMS marketing researchers are now using X-rays to check the purity of grass seed.

Up to now, inspectors have had to check each seed in the sample individually—at the rate of about 3,000 seeds a day. The X-ray machine does the job in 30 minutes.

The device works like this: Each seed is automatically dropped onto an 8-inch revolving plate which has holes drilled into it just large enough for one seed. As the sample passes in front of the X-ray tube, counters record the number of grass seeds as well as the number of empty hulls.

From this, marketing scientists can calculate the percentage of grass seeds and other objects in the sample.

The X-ray counter was built by R. A. Stermer, agricultural engineer with the Market Quality Research Division of AMS at College Station,

Texas. Warren L. Butler, AMS biophysicist at Beltsville, Md., developed the initial method, and Karl H. Norris, now head of the Instrumentation Research Laboratory, Beltsville, supervised the project.

Marketing Charges and Services

(continued from page 9)

distributing these items—not a curtailment of marketing services. Gains in the productivity of the food marketing system in general seem more evident in recent years than in the early post World War II period.

Rises in marketing costs are not always inevitable—even with increases in general cost levels and more services. Frying chickens are an outstanding example. Farm-retail spreads for frying chickens average about the same as they did 10 years ago. And uniform, high-quality chicken is much more available to shoppers today than a decade ago and this chicken requires less preparation in the kitchen by the homemaker.

Other similar examples can be cited where more services are being provided at the same or less cost. But the farm-retail spread for some other food products has risen by as much as 50 percent in the last decade without a corresponding increase in the services provided with these products.

Further upward pressures on marketing costs can be expected in the coming year and beyond. These can, however, be held down by new technology and better marketing methods—the result of research, both public and private.

Some Interesting Facts About **THE FOOD WE EAT...**

Ten million people are employed in the storing, transporting, processing, and merchandising of agricultural products. Another 6 million have jobs providing supplies to farmers. About 7.4 million people work on farms and ranches.

Americans pay about the same share of their incomes for food now as before World War II—and they're eating more and better foods.

Three "ready-to-serve" meals costs a family of four \$6.70. Prepared at home, these meals would cost only \$4.50, but require 4 hours more work by the housewife.

Of every \$20 spent on groceries, \$1.50 to \$2 goes for packaging—to keep the food in good condition and to draw the customer's attention to the product.

Sometimes the package may cost as much as the food itself.

One hour's factory labor in 1959 bought: 2.1 pounds of round steak, 3.3 pounds of bacon, or 17.6 pints of milk.

Food's still a good buy. Since 1947-49, the cost of food has risen only 19.5 percent compared to transportation costs, 46.1 percent; rent, 41.4 percent; fuel, 36.3 percent.

Today, people buy a lot more than food at the grocery store. About a fifth of the purchases in supermarkets are nonfood items.

As a general rule, the farmer's share of the food dollar declines as the amount of processing increases. Not so for oranges. The grove owner receives 32 cents of the dollar spent on fresh oranges, 38 cents of the dollar for canned orange juice, and 43 cents of that for frozen orange juice concentrate.

Bread has one of the highest marketing margins. The farmer gets less than 3 cents for a 20-cent loaf.

The average income per capita of farm population in 1959 was \$965; per capita income of nonfarm people was \$2,216.

Today, one hour of farm labor produces 4 times as much food and other crops as it did in 1919-21.

Hourly earnings of food marketing workers is up 70 percent, but the labor cost of a pound of food has risen only 34 percent. Increased efficiency has held down costs.

Crop production is 56 percent higher per acre than it was 40 years ago. Output per breeding animal is 81 percent greater.

Foods are traveling farther to market. In 1959, more fresh fruits and vegetables were shipped into New York City from California and Florida (63,000 carlots) than from New York State (24,000 carlots).

As many as 5,000 different items fill the shelves of a modern supermarket.

The average size of supermarkets increased from 8,000 square feet in 1948 to 17,000 square feet in 1959.

The U.S. Department of Agriculture inspects and certifies as wholesome more than 20 billion pounds of red meat each year—10.3 billion pounds of beef, 8.8 billion pounds of pork, 613 million pounds of lamb and mutton, and 604 million pounds of veal.

USDA inspectors, during the first year of mandatory poultry inspection, certified as wholesome more than 4.7 billion pounds (ready-to-cook) weight of poultry.

To feed a population of 230 million (as predicted for 1975), farmers and ranchers must produce: 16.3 billion pounds more red meat; 47 billion pounds more milk; 20.7 million tons more fruits and vegetables; 20 billion more eggs.